

and their large multiple inflorescences. Consequently the collector turns to the smaller, more tractable plants for making specimens.

From the living plants the following notes were taken: Larger plants \pm 2 meters tall and having the principal raceme 7.5–9.3 dm. long; often 12 or more long, erect branches from *at* to a few cm. *below* base of principal raceme and having a raceme \pm 0.5 as long as principal one. Principal lower leaves (excluding basal ones) on these larger plants often 4.5–5 dm. long. The acuminate tip of the median and upper leaves is usually a conspicuous feature.

CENTAUREA MACULOSA Lam.—In 1908, Gray's New Manual (edit. 7) gave (p. 861) New England to New Jersey as the range for *C. maculosa* in the United States. Deam more recently (Fl. Indiana 1104. 1940) gave its range as extending west to Michigan, Wisconsin, and Minnesota. For Indiana he was reluctant to admit the species as being well enough established to deserve listing. In adjacent southern Michigan, however, I have seen several small colonies during the past four years and these all seemed thoroughly established, especially so in Barry County and at a country spot near Howell. My no. 5025 was collected in quantity near a fence in a hay field, one half mile east of Leach Lake, northeast of Hastings, Aug. 8, 1945.

CHICAGO TEACHERS COLLEGE and CHICAGO NATURAL
HISTORY MUSEUM.

BOTANICAL VISITS TO FORTS CLARK, MANDAN AND UNION IN NORTH DAKOTA*

O. A. STEVENS

Plates 1025 and 1026

Through the enthusiastic assistance and guidance of my friend, Roy N. Bach, I was able to visit the site of Fort Mandan where Bradbury and Nuttall collected in 1810 and that of Fort Union where Audubon collected and illustrated birds and mammals in 1843. Maximilian was also at Fort Union in 1833. His artist,

* Contribution from the Department of Botany, North Dakota Agricultural Experiment Station, published with the permission of the Director.

Bodmer, gave us an excellent illustration of Fort Union and of the Indians, fortunately just before they were decimated by small pox.

Maximilian (1) gave us the best general account and Bodmer's classic illustrations are the best of the Indians of that time, but botanical contributions of this trip were few. Special interest attaches to Audubon's visit from the fact that he had engaged Isaac Sprague as assistant artist. Asa Gray soon discovered Sprague and for many years he was Gray's illustrator. The beautiful figures (unlabeled) of *Penstemon albidus*, *Echinacea angustifolia* and *Psoralea esculenta* in Audubon's birds (2) are undoubtedly Sprague's work. In other figures, one is more in doubt how much Audubon modified the work of his assistant. In another paper (3), I have discussed this further.

On June 21, 1945, we reached the site of Fort Union on the bank of the Missouri, about thirty rods east of the Montana State line. A tall flag pole was erected by the Great Northern Railway in 1935. The North Dakota Historical Society purchased the site in 1938 and has recently constructed a stone marker. A few posts stand to mark the walls but a gravel pit of recent date came near to destroying the site before the State intervened. Much of the material of the original fort was removed and used at Fort Buford a few miles farther east. Here the powder house still stands and the site is preserved.

I wanted to collect something from the fort-site. What would it be? Certainly not the too prevalent *Conringia* or *Descurainia Sophia*. I noted only one plant of *Penstemon albidus* and decided on a bit of *Sphaeralcea coccinea*, *Collomia linearis* and the latest arrival, *Camelina microcarpa*.

A mile or two farther east we found a road leading into the hills where Sprague and Audubon botanized. *Penstemon albidus* was still rare. *Psoralea esculenta* was fairly common and Mr. Bach found one plant with 13 racemes. *Echinacea* was just showing flower buds. *Astragalus pectinatus* was in full bloom and *A. bisulcatus* well begun. It seems strange that Audubon would not have mentioned these for they are striking. A few miles farther north we saw really breath-taking views of *A. bisulcatus*—great clumps dotting the small flats just below the foot of the buttes.

The afternoon was hot and we did not feel very ambitious. A creeping plant attracted my attention as we started down the hillside. It was *Phlox alyssifolia* (No. 818), which I had seen in the garden of J. Clayton Russell at Beach, North Dakota. He had found it about 30 miles over in Montana but we had not yet collected it in North Dakota. Here it seemed to have flowered only sparingly. On some hills farther north it was in better condition, with faded flowers and finally one fresh one, 25 mm. wide. Dr. E. T. Wherry writes me that there is a specimen of it from Fort Buford in the Britton Herbarium at the New York Botanical Garden, also one from "Phinney, N. D.," collected by C. Lockwood in 1898, in the Field Museum Herbarium. We have been unable to trace this locality.

Just before leaving the first hill, I was astonished to come upon *Astragalus Drummondii* (No. 817), new to North Dakota. The single plant had been half eaten off. A few miles farther north, we found one more plant and still farther, many plants, about seven miles south of U. S. Highway No. 2 and about 15 miles west of Williston. It looks so much like the prevalent *A. pectinatus* that one could hardly stop to examine each clump, and this may be why it had not been detected earlier.

On June 22, Audubon (4) had written (2: 52): "found a number of wild roses in bloom, quite sweet scented, though single and of a very pale rose color." It was June 23, when crossing the river at Elbowoods, we came suddenly on a bank of the first roses, *R. Woodsii*. My impression at first was that they were quite uniform in color and distinctly paler than our eastern *R. blanda*, but later we noticed various hues, more like the familiar "*arkansana*."

On August 7, 1938, we visited the site of the Indian village at Fort Clark. Here, also, the botanizing was disappointing. Behind the village-site was as pure a stand of *Bouteloua gracilis* as one could wish to see. The lodge-rings and most of the village-site were covered with *Agropyron Smithii* and a few weeds, especially *Lactuca scariola* and *L. pulchella*. Between the circles was a heavy growth of *Iva xanthifolia* and *Chenopodium*. Audubon (4) wrote of the camp being overrun with *Chenopodium album*, but it was doubtless *C. Berlandieri*. I finally collected a single plant of *Euphorbia glyptosperma*, large enough for seven



Site of BIG HIDATSA VILLAGE just north of Knife River, near Stanton, N. D. Creater-like circles are lodge rings, with dark lines of weeds between. Bushes at lower left and upper right are *Shepherdia argentea*. Air photo by Roy N. Bach, 1941 (looking SE).



A detached clay butte on bank of Missouri River, above site of Fort Manuel Lisa and just below west end of proposed Garrison Dam. Formations and outwash from foot of butte in left foreground are very characteristic. *Opuntia* in grass and on small clay mounds at right. Single tree is probably *Fraxinus*, shrubs at left of it mostly *Shepherdia*. Shelf at base of butte has such plants as *Chrysothamnus*, *Artemisia longifolia*, *Gutierrezia* and *Eriogonum multiceps*. Dark line toward top of butte is a thin lignite coal seam. Photo by Stanley Saugstad, 1941. Courtesy N. D. Game and Fish Dept.

specimens (No. 384). The site of the large Indian village just north of the Knife River was chiefly in a farmyard pasture. Here also, *Iva xanthifolia* was one of the most conspicuous plants. It is strange how the lodge-circles still show, especially as seen from the air (PLATE 1025).

Much confusion has attached to the location of these historic places, especially that of "Fort Mandan," so often mentioned by Nuttall and Bradbury. In discussing *Arnica fulgens*, Maguire (5) has enlarged upon Pennell's error (6) in assuming that the Fort Mandan of Nuttall was the same as that of Lewis and Clark. The latter structure was already partly destroyed when the party returned from the west coast and the site later was washed away by the river. A marker has been established by the North Dakota Historical Society on higher ground. This is on the east ("north" of the journals), bank about three miles north of the present railway station of Fort Clark, which is on the west side or eight miles south of the mouth (where it enters the flood-plain) of the Knife River.

The "Fort Mandan" of Nuttall and Bradbury was about an equal distance north of the Knife River on the west ("south") side of the Missouri. It is more correctly known as Fort Manuel Lisa, a trading and administrative post operated by that noted character. Truax (7) has given the best discussion of its location. Some maps show a town named Mannhaven, which was a river grain-elevator there. The bluffs between this place and the Knife River are high and steep. Northward, the river swings to the west, leaving a wide "bottom." The "fort" was located in a sort of amphitheater formed by the confluence of several short, deep "coulees" or ravines. The immediate bluffs are of the "Bad Land" butte type, presenting bare clay walls on the most exposed places, but the north and more gentle slopes are well covered with vegetation. The present plan seems to be to locate the west end of a huge dam across the river about three miles above the site. This may destroy the natural appearance of the place and cause great changes in flora.

Eriogonum flavum is quite a common plant on the hills. *E. multiceps*, described from Maximilian's collections, which is more closely restricted to eroded clay slopes, grew on the buttes at the site. *E. pauciflorum* is also attributed to the region, but so far, I